

ABSTRACT OF THE DISCLOSURE

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There is provided a technique to form a single crystal semiconductor thin film or a substantially single crystal semiconductor thin film. A catalytic element for facilitating crystallization of an amorphous semiconductor thin film is added to the amorphous semiconductor thin film, and a heat treatment is carried out to obtain a crystalline semiconductor thin film. After the crystalline semiconductor thin film is irradiated with ultraviolet light or infrared light, a heat treatment at a temperature of 900 to 1200°C is carried out in a reducing atmosphere. The surface of the crystalline semiconductor thin film is extremely flattened through this step, defects in crystal grains and crystal grain boundaries disappear, and the single crystal semiconductor thin film or substantially single crystal semiconductor thin film is obtained.